AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings of claims in the application:

Claims 1-29 (Withdrawn)

30. (Currently amended) A vacuum cleaner (10), including:

a housing;

a suction airflow sensor (94), disposed within said housing, for detecting a condition associated with a suction airflow path mounted to the housing;

a sensor processor (90), disposed within said housing, in communication with the suction airflow sensor for evaluating the detected condition, determining whether a responsive action is required, and, when required, initiating a suitable predetermined control procedure in response to the detected condition;

a floor type sensor (97), disposed within said housing, in operative communication with the sensor processor for emitting sonic energy toward a floor being traversed by the vacuum cleaner and detecting sonic energy reflected by the floor, wherein the sensor processor interprets the detected sonic energy to identify a floor type, and initiates a predetermined control procedure based on the type of floor being traversed;

a vacuum source (36, 38), disposed within said housing, for creating the suction airflow path to provide a vacuuming function for collection of dust and dirt particles; and

a controller processor (74), disposed within said housing, in communication with the sensor processor for selectively controlling the vacuum source, based at least in part upon information received from the sensor processor;

wherein the suction airflow sensor includes a differential pressure sensor for detecting a difference between a first pressure associated with the suction airflow path and a second pressure associated with ambient air near the vacuum cleaner.

31. (Original) The vacuum cleaner as set forth in claim 30, the sensor processor comprising:

means for determining whether the first pressure in the suction airflow path is suitable for normal vacuuming operations based on information provided by the sensor; and

a status indicator (164) for indicating whether the vacuum cleaner is able to perform normal vacuuming operations.

32. (Currently amended) The vacuum cleaner as set forth in claim 31, the sensor processor comprising:

means for determining whether the suction airflow path is obstructed by a foreign object;

wherein, if the suction airflow path is obstructed by a foreign object, the sensor processor causes a ~~the~~ suction motor to stop and updates the status indicator.

33. (Original) The vacuum cleaner as set forth in claim 31, the sensor processor comprising:

means for determining whether a dirt receptacle associated with the vacuum cleaner is generally full;

wherein, if the dirt receptacle is generally full, the sensor processor performs a predetermined control procedure and updates the status indicator.

34. (Original) The vacuum cleaner as set forth in claim 31, the sensor processor comprising:

means for determining whether a filter associated with the vacuum cleaner is generally blocked,

wherein, if the filter is generally blocked, the sensor processor performs a predetermined control procedure and updates the status indicator.

35. (Original) The vacuum cleaner as set forth in claim 31 wherein the status indicator includes an illuminated indicator having at least four illuminated display sequences.

36. (Original) The vacuum cleaner as set forth in claim 31 wherein the status indicator includes an annunciator having a plurality of audible tone sequences.

37. (Currently amended) The vacuum cleaner as set forth in claim 30 wherein the housing ~~vacuum cleaner~~ is located within the vacuum cleaner, the vacuum cleaner is one of ~~a type selected from the group consisting of~~ a robotic vacuum cleaner, a robotic canister-like vacuum cleaner, a hand vacuum cleaner, a carpet extractor, a canister vacuum cleaner, a stick vacuum cleaner, an upright vacuum cleaner, and a shop-type vacuum cleaner.

38. (Original) The vacuum cleaner as set forth in claim 30, the vacuum cleaner further including:

a movable brush (54) mounted to the housing;

a brush motor (100), disposed within said housing, in operative communication with said brush to operate said brush; and

a brush motor controller (134) in operative communication with the controller processor and the brush motor to selectively operate said brush motor and brush to assist in collection of dust and dirt particles.

39. (Original) The vacuum cleaner as set forth in claim 38, the vacuum cleaner further including:

an overcurrent sensor (98), disposed within said housing, in communication with the sensor processor and the brush motor for monitoring a characteristic of the brush motor and providing an associated feedback signal to the sensor processor; and

a reset switch (140), disposed within said housing, in operative communication with the sensor processor and the brush motor controller for manually resetting power applied to the brush motor and providing a reset switch activation signal to the sensor processor;

wherein the sensor processor compares the feedback signal to a predetermined threshold and, when the feedback signal is less than the predetermined threshold, removes power from the brush motor and disables operation of the brush until power is manually reset.

40. (Original) The vacuum cleaner as set forth in claim 39, the overcurrent sensor including:

an overcurrent feedback module (135) in operative communication with the sensor processor and the brush motor for monitoring the brush motor characteristic and providing the feedback signal to the sensor processor.

41. (Original) The vacuum cleaner as set forth in claim 39 wherein the brush motor characteristic associated with the feedback signal includes one or more of a brush motor RPM, a brush motor torque, a quantity of brush motor revolutions, and a distance of brush motor rotation.

42. (Original) The vacuum cleaner as set forth in claim 38, the vacuum cleaner further including:

an overcurrent sensor (98), disposed within said housing, in communication with the sensor processor and the brush motor for detecting a level of electrical current flowing through the brush motor; and

a reset switch (140), disposed within said housing, in operative communication with the sensor processor and the brush motor controller for manually resetting power applied to the brush motor and providing a reset switch activation signal to the sensor processor;

wherein the sensor processor compares the detected current to a predetermined threshold and, when the detected current exceeds the predetermined threshold, removes power from the brush motor and disables operation of the brush until power is manually reset.

43. (Original) The vacuum cleaner as set forth in claim 42, the overcurrent sensor including:

an electronic switch (138) in operative communication with the sensor processor and the brush motor for enabling and disabling operation of the brush motor; and

a current sense circuit (136) in operative communication with the sensor processor and the brush motor for sensing the level of electrical current flowing through the brush motor.

44. (Currently amended) The vacuum cleaner as set forth in claim 38, the ~~vacuum cleaner~~ floor type sensor further including:

a lookup table (LUT), wherein the floor type sensor compares the detected sonic energy to a plurality of values in the LUT ~~a lookup table (LUT)~~, wherein the LUT values represent a plurality of types of floors, matching the detected sonic energy to a LUT value to determine the type of floor being traversed, and initiating a predetermined control procedure based on the type of floor being traversed.

45. (Original) The vacuum cleaner as set forth in claim 44, the vacuum cleaner further including:

a signal generator circuit (124), disposed within said housing, in communication with the sensor processor and the floor type sensor for generating a signal associated with the sonic energy emitted by the floor type sensor;

a signal conditioning circuit (130), disposed within said housing, in communication with the floor type sensor for conditioning a signal associated with the sonic energy detected by the floor type sensor; and

a comparator processor (132), disposed within said housing, in communication with the signal conditioning circuit and the sensor processor for comparing the conditioned signal to the LUT values.

46. (Original) The vacuum cleaner as set forth in claim 30, the vacuum cleaner further including:

a floor distance sensor (96), disposed within said housing, in operative communication with the sensor processor for emitting light energy toward a surface of a floor toward which the vacuum cleaner is advancing and detecting light energy reflected by the floor; and

a drive motor (104), disposed within said housing, in operative communication with the controller processor to selectively operate a drive wheel (50) to propel the vacuum cleaner;

wherein the sensor processor compares the detected light energy to a predetermined threshold and, when the detected light energy is less than the predetermined threshold, stops the drive motor.

47. (Currently amended) The vacuum cleaner as set forth in claim 46, the vacuum cleaner further including:

a signal conditioning circuit (146), disposed within said housing, in communication with the floor distance sensor and the sensor processor for conditioning a signal associated with the light energy detected by the floor distance ~~type~~ sensor.

48. (Currently amended) The vacuum cleaner as set forth in claim 46 ~~wherein~~, further including:

~~when the detected light energy is less than the predetermined threshold,~~ a light detector that receives the amount of light detected by the floor distance sensor and communicates the amount of light to the sensor processor to reverses the drive motor and activates a localization function associated with the vacuum cleaner when the detected light energy is less than the predetermined threshold.

49. (New) A vacuum cleaner (10), including:

a housing;

a floor distance sensor (96), disposed within said housing, in operative communication with the sensor processor for emitting light energy toward a surface of a floor toward which the vacuum cleaner is advancing and detecting light energy reflected by the floor; and

a drive motor (104), disposed within said housing, in operative communication with the controller processor to selectively operate a drive wheel (50) to propel the vacuum cleaner;

wherein the sensor processor compares the detected light energy to a predetermined threshold and, when the detected light energy is less than the predetermined threshold, stops the drive motor.